APPENDIX A - CLEAN VERSION OF CLAIM 34

34. (Currently amended) An optical transmission method, comprising:

performing a plurality of signal transmissions between cores of an integrated circuit, wherein each signal transmission is between two cores of a different pair of cores of the cores of the integrated circuit, wherein each signal transmission comprises a transmission of an optical signal in the visible or infrared portion of the electromagnetic spectrum at a wavelength that is specific to each different pair of cores and is a different wavelength for each different pair of cores and there is no overhead for decoding or arbitration in said preforming the signal transmissions that would otherwise exist if a same wavelength for the optical signals were permitted for pairs of cores of the different pairs of cores, said integrated circuit comprising:

multiple layers comprising a plurality of glass layers and a plurality of metal layers in an alternating pattern such that the glass layers and the metal layers alternate in direct mechanical contact with respect to each other,

a beveled edge adjacent to the multiple layers and oriented at an angle with respect to the multiple layers,

a lower space below the multiple layers and below the beveled edge, said lower space bounded by a chip edge of the integrated circuit,

the cores,

an optic controller connected to each core,

a plurality of optical transmitters connected to each core under control of the optic controller of each core such that each optical transmitter connected to each core is disposed within a glass layer of the plurality of glass layers,

a plurality of optical receivers connected to each core under control of the optic controller of each core such that each optical receiver connected to each core is disposed within a glass layer of the plurality of glass layers, and

a plurality of optical channels, each optical channel comprising optical fibers for transmission of optical signal and extending from one of the optical transmitters connected to one core of the cores to one of the optical receivers connected to another core of the cores,

wherein each signal transmission is between an optical transmitter from one core of the cores to which a first optic controller is connected to an address of an optical receiver of another core of the cores to which a second optical controller is connected;

wherein performing each signal transmission comprises:

decoding, by the first optic controller, the address;

after said decoding, selecting an optical channel of the plurality of optical channels for subsequently transmitting an optical signal over the selected optical channel, wherein the selected optical channel extends from the optical transmitter of the one core and the optical receiver of the another core, and wherein said selecting is performed by the first optic controller;

after said selecting, transmitting data from the first optic controller to the optical transmitter of the one core;

encoding into optical data, by the optical transmitter of the one core, the transmitted data; and

transmitting the optical signal comprising the optical data from the optical transmitter of the one core to the optical receiver of the another core via the selected optical channel;

wherein said performing the plurality of signal transmissions comprises performing a first signal transmission at a first wavelength in the visible or infrared portion of the electromagnetic spectrum and performing a second signal transmission at a second wavelength in the visible or infrared portion of the electromagnetic spectrum while the first signal transmission is being performed such that the second wavelength differs from the first wavelength;

wherein said performing the first signal transmission comprises transmitting a first optical signal from a first optical transmitter attached to a first core of said cores to a first optical receiver attached to a second core of said cores over a first optical channel of the plurality of optical channels;

wherein the first optical transmitter is disposed within a first glass layer of the plurality of glass layers and the first optical receiver is disposed within a second glass layer of the plurality of glass layers such that the first and second glass layers are different glass layers;

wherein the first optical channel comprises a first segment of the first glass layer, a second segment of the second glass layer, a first light via disposed between the first segment and the second segment, a first redirection termination disposed between the first segment and the light via and having a shape for causing the first optical signal propagating in the first segment to be diverted into the first light via to propagate in the first light via, and a second redirection termination disposed between the first light via and the second segment and having a shape for causing the first optical signal exiting from the first light via to be diverted into the second segment to propagate only in the second glass layer to the first receiver;

wherein the method further comprises after the first optical signal is received by the first optical receiver: directing photons of the first optical signal away from the multiple layers and into the beveled edge and totally reflecting the photons from the beveled edge into the lower space and out of the integrated circuit through the chip edge, said angle being sufficient for said totally reflecting to occur;

wherein optical fibers of the first glass layer, the second glass layer, and the first light via through which the first optical signal is transmitted consist of a same glass material;

wherein said performing the second signal transmission comprises transmitting a second optical signal from a second optical transmitter attached to a third core of said cores to each optical receiver of the plurality of optical receivers connected to a fourth core of said cores over a second optical channel of the plurality of optical channels;

wherein the second optical transmitter is disposed within a third glass layer of the plurality of glass layers and the plurality of optical receivers connected to the fourth core are disposed within different glass layers of the plurality of glass layers;

wherein the second optical channel comprises a third segment of the third glass layer, a second light via coupled to the third segment and extending to a fourth glass layer of the plurality of glass layers such that the third and fourth glass layers are different glass layers, a third redirection termination disposed between the third segment and the second light via and having a shape for causing the second optical signal propagating in the third segment to be diverted into the second light via to propagate in the second light via, and a fourth redirection termination disposed between the second light via and the fourth segment and having a spherical shape for causing the

second optical signal exiting from the second light via to be dispersed so as to be detected by each optical receiver of the plurality of optical receivers connected to the fourth core;

wherein optical fibers of the third glass layer and the second light via through which the second optical signal is transmitted consist of the same glass material.